

Lesson Plan Format

I. Preinstructional planning

Key concept(s): Exploring Patterns in Adding and Subtracting Integers.

NCTM Standard(s):

Number & Operations
Representations
Reasoning & Proof

Objectives:

Student will: see patterns in adding and subtracting integers. From these patterns they will reason that subtracting a negative is adding and adding a negative is subtracting that value.

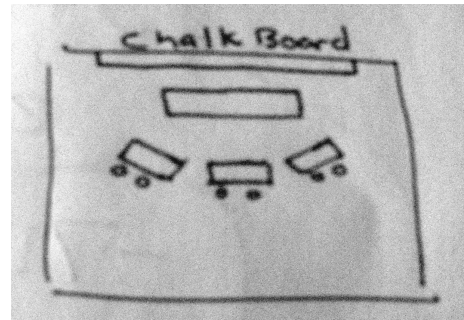
Teacher will: pause when appropriate: after questions, when waiting for responses, etc.

Grade level: 7

Time allotted for lesson: 15 minutes

Student grouping: Working in pairs.

Special arrangements:



Text and/or other resource(s):

Accentuate the Negative: Grade 7 Sections 3.3 - 3.4

Materials: (Please attach all graphic organizers to this lesson plan.)

Graphic Organizer for adding and subtracting integers to see patterns. See attached.

Some learners may feel comfortable doing these problems with a chip board. I will have chips for the three pairs of students to use (10 positive and 10 negative for each pair, so 30 of each).

Planning for individual differences:

No learners with special needs, but there are some learners that are quick. The launch will be short so no additional planning will be needed. During the explore phase, the graphic organizer will keep the class together. If they really do finish quickly, in advance of the others, I will encourage them to think about the following steps that are to come.

Classroom management plans:

Classroom Rules (REAL Rules):

1. Respect
2. Effort
3. Attention
4. Learn

II. Implementation of the learning sequence

Beginning activities (How will you introduce the lesson and motivate the students?)

List activities and key questions.

The launch will consist of a ruse that I have the problems and the solutions, but forgot the operations needed and that the learners need to find the operations need to get the appropriate answer. Number three is optional depending on the time. The introduction of negative integers can lead into the explore phase, specifically adding and subtracting integers and the resulting patterns.

Learners are to work in pairs. The activity should take about three minutes.

- | | | |
|-------------------------------|--------------------------------------|--|
| 1. $3 - 7 - 4 = 0$ | Solution: $3 - 7 + 4 = 0$ | Are we allowed to subtract a big number from a small number? |
| 2. $-7 - (-3) - (-4) = 0$ | Solution: $-7 - (-3) - (-4) = 0$ | Hmm... How did you find the answer? Try to see if they can be led to making a connection to problem 1. |
| 3. $5 - (-3) - 6 - (-7) = 15$ | Solution: $5 + (-3) + 6 - (-7) = 15$ | Encourage discussion about the method used to solve. Did they guess or did they look at the magnitudes of the numbers then determine the necessary operations? |

Middle (learning) activities: List activities and key questions.

Comments

For this explore phase, learners will again work in pairs. Hand out one graphic organizer per pair. This activity should take about ten minutes.

What methods or tools do you use to think of sizes of numbers? What have we used in previous lessons? Number line? Alright fill in the number line on your graphic organizer, in this case, choose a dash in the middle for zero.

Need to walk around and verify appropriately drawn number lines. Look for negative signs, typical directions (right is positive and left is negative) for positive and negative (if they have done it backwards, just make sure they know which way it is increasing and decreasing).

First column of problems are missing their second operand and operation. Give them **the operand (4) and operation (subtraction)**. Each following problem will have the same operation and the operand will be one less than the previous one. What will the solutions be? Walk around and ensure following of directions. Are the learners decreasing properly beyond 0? Have they looked at the number line? How are they finding the answers: number line, chip board, mentally, they see the pattern?

When they have finished the first column, ask them how they found their answers. Probably some will say they used the number line, some will say the chip board and maybe some will recognize the pattern. Go to the second column. First missing **operand is 6 and the operation is addition**. Again, the missing operands should decrease. Are the learners seeing the pattern more quickly this time? Continue letting them determine the answers as they will.

When they finish, ask about the answers. Specifically, feign interest in the adding of negative integers and the subtracting of negative integers. How did the students solve those "difficult" problems (ex. $5 + -2$)? If someone comes up with adding a negative is subtracting or subtracting a negative is adding then have them rewrite those problems in the provided lines.

If there is time, pose the hypothesis that subtracting two negative numbers always makes a smaller (negative number). What is the class' reaction? Have them vote. Then "remember" that there is one more column of problems. The missing **operand is subtraction. Start by subtracting 2**. Again decrement the operand.

Ending (Closing) activities: (Summarize, review, lead-in for next lesson)

Closing Activities should take about two minutes.

1. Summarize:

When the learners have completed the final column, ask if they are able to rewrite the number sentences like they did before (if they have not already). Get them to state verbally how they think of the rules.

Hopefully, they will recognize that the previously mentioned hypothesis is also wrong sometimes because subtracting a negative is like adding. If they do not, ask them about the pattern and its progression in the answers. If no one notices, remind them of the hypothesis and ask them to provide a counter example.

2. Lead-in for Next Lesson:

This class was kind of like brainteaser games, next class we will return to uses of integers in real life: temperature.

3. Comment on Behavior

4. Clean Up: make sure no materials (graphic organizers) are left behind and that the learners return their chip boards.

III. Postinstructional planning

How will you know if your students met your objectives?

Assessment Checklist to go here.

How will you know if you met your own personal objective?

Assessment Checklist to go here.